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BOTANY.

An Old Botanical Letter.—In a copy of Persoon's "Synopsis Methodica Fungorum," recently purchased of a London bookseller for the botanical library of the University of Nebraska, the autograph letter given below was found. It was probably addressed to Sowerby, the author of the "English Fungi" alluded to in the first paragraph. The letter is given *verbatim et literatim* :

DEAR FRIEND,

At last I have the pleasure to send You my Synopsis fungorum, You desired to have long ago. I wish You may not be disappointed in Your expectation of it. You'll find many of the species You have published in Your English fungi. I have had the confidence in the justness of Your representations that I have made the descriptions according to them ; if I have been mistaken in this proceeding, I beg You to instruct me of it by a letter.

You have received sometime since several letters and parcels from me, without my having the pleasure to receive an answer from You. I believe therefore to be intitled to give You a gentle reproof for it. However You may make amends for it by writing me soon, particularly if You joined to the letter a good quantity of plants principally cryptogame ones. I remain with esteem and friendship

Sir

Gottingue, May 2, You mosobedient servant

1801. C. H. PERSOON.

The last sentence is marvelously like those written by botanists to-day. How many of us are wont to forgive our tardy correspondents on the same terms, even to specifying "principally cryptogame ones."—CHARLES E. BESSEY.

The Host-Index of the Fungi of the United States.—Part II. of this exceedingly useful publication has just appeared, extending the index through the Gamopetalæ and Apetalæ. The authors—Professor W. G. Farlow and Mr. A. B. Seymour—state that the remainder of the work will appear in November of the present year. They request that "botanists having errors or omissions to report in the parts already issued would kindly inform them regarding such errors and omissions at an early date, in order that the corrections and additions may be inserted in the forthcoming third part."

For the benefit of those who have not seen this work we may say that it is a systematic list of the Phanerogams which are affected by fungi. All the fungi known to affect each species are given, making in some cases a long list; as, for example, in the beech (*Fagus ferruginea*), which has 103; the white oak (*Quercus alba*), 90: the buttonwood (*Platanus occidentalis*), 37; the white elm (*Ulmus americana*), 24; the white ash (*Fraxinus americana*), 31; the sassafras (*Sassafras officinale*), 42. It would be an interesting inquiry to investigate the relation between the structure and habits of the hosts and the number of fungi which live upon them. A casual examination appears to show that those species which are most widely distributed are most affected by fungi. Woody plants appear to be somewhat more troubled than are their herbaceous relatives, and there seem to be more upon large plants than upon small ones.—CHARLES E. BESSEY.

Some Bad Station Botany.—The experiment stations have in the main been fortunate in their botanical publications, and very little has gone out from them which is misleading or unscientific. Now and then a worker in one line steps over into that belonging to some one else, and then the results are not so satisfactory. We have before us a good illustration of this in a recent bulletin from the Ohio station, in which the agriculturist discusses "Smut in Wheat," meaning thereby the so-called "stinking smut" of the genus Tilletia. After quoting Professor Henslow as the authority for the remarkable (?) fact that "the spores have been accurately measured, and the diameter found to be one sixteen-hundredth of an inch" (as if any freshman in a botanical laboratory couldn't have measured the Ohio spores!), he quotes some calculations as to the number of spores in a single grain of wheat, and the still more remarkable statement "that it is hardly possible to conjecture how many sporules each spore contains, since they are scarcely distinguishable under very high power of the microscope." This last is about as bad as the usual newspaper science, but we certainly expected something better in an article from a station worker. This is not agricultural science; it is sheer ignorance.—CHARLES E. BESSEY.

Wheat Smut.—In pleasing contrast to the work done in some experiment stations is that by Professor Kellerman and Mr. Swingle, of the botanical department of the Kansas station. A recent bulletin on the fungicides for stinking smut of wheat is a model of good work. It is modestly called a "preliminary" report, but the subject is as well wrought out as in most so-called "final" reports.

After a brief but most excellent statement of the main points in the life-history of the fungus, the details of a number of experiments are given, the object of which was to prevent the smut by treatment of the seed before planting. Fifty-one different treatments were used with varying results. Of these, three prevented the smut entirely, although injuring the vitality of the wheat to a certain extent. Six other treatments reduced the smut to less than one per cent. The three first mentioned were (1) soaking for twenty-four hours in a five per cent. solution of copper sulphate; (2) soaking for thirty-six hours in Bordeaux mixture (copper sulphate two and two-third lbs., lime five lbs., water four gal.); (3) soaking for twenty hours in a five per cent. solution of potassium bichromate. Of the six treatments which effected a reduction of the smut to less than one per cent., that in which the seed was soaked for fifteen minutes in water at a temperature of 132 degrees Fahrenheit was the simplest, and, all things considered, the best. The investigators give it their approval for general use.—CHARLES E. BESSEY.

A Key to the Mosses.—Professor Charles R. Barnes, of Madison, Wis., has done a good thing for the students of mosses by preparing a handy key to the genera and species found described in Lesquereux and James's "Manual." A somewhat hasty examination of it indicates that it is well calculated to aid the beginner. Copies may be obtained of the author for fifty cents each.

Reserve Food-Materials in Buds and Surrounding Parts.—Professor Halsted's paper on this topic, published in the Memoirs of the Torrey Botanical Club, is a valuable contribution to our knowledge of the nutrition of the shoot in early spring. He takes up in order terminal buds, lateral buds, and twig sections. Naturally the most important reserve material was found to be starch, and its distribution occupies the greater part of the paper. It is found quite generally at a short distance below the growing point. Grape sugar is present in all terminal buds. Other cell-contents are discussed in the paper, and the suggestive fact is recorded that crystals "are especially numerous in the cellular tissue that lies between the leaf scar and the bud above it." They are abundant also "just below the growing tips of all buds."

In the study of twigs several interesting and unexpected things come out, as, for example, the fact that the spines found upon many trees and shrubs are more or less well filled with starch. As to these the author makes the following remark: "It is very likely that the spines are primarily for the warding off of enemies, but if we can look upon the protective organs as serving another purpose, it adds further dignity to the police department, so to speak, of the plant." A couple of pages are given to methods and reagents, and two plates serve to illustrate the histology of the paper.

North American Species of Tylostoma.—Mr. A. P. Morgan, in continuing his papers on the North American Fungi, has made a revision of the species of the genus Tylostoma, one of the stalked puff-balls. He recognizes five species, two of which are new. The species fall under two sections, viz.: (1) Cyclostoma, with circular, entire mouth, containing *T. mammosum* Mich. and *T. verrucosum* Morgan; and (2) Schizostoma, with irregular, lacerate mouth, containing *T. fimbriatum* Fr., *T. campestre* Morgan, and *T. meyenianum* Kl. All the species are illustrated by good figures.

Watson's Contributions to American Botany.—Contribution XVII., issued September 25, consists of miscellaneous notes upon North American plants, and descriptions of new species from Northern Mexico. In the first a synopsis of the known species of Streptanthus is given, twenty-two species being recognized, three of which are described for the first time.

Dr. Watson reviews the question of the synonymy of *Andropogon furcatus* Muhl., and says that Lamarck's species, *A. provincialis*, "was based upon what was said to be a grass of Provence, in Southern France." This was in 1783. Gerard, in 1761 figured and described the same grass. Both Gerard and Lamarck cite synonyms belonging in part to *A. ischæmum*. Both descriptions and figures agree best with the *A. furcatus* of Muhlenberg, which appears to have been grown in some of the gardens of Europe at or before Lamarck's time. "It is highly probable, therefore, that the original *A. provincialis*, aside from its synonymy, and *A. furcatus* are the same species." However, Dr. Watson urges that Muhlenberg's name should be retained; the other, he says, "is a false name, and it cannot be justifiable to make a change for the sake of reviving and perpetuating an error."

A new genus of Rutaceæ (Sargentia) is characterized, and one species (*S. greggii*) described, from material collected by Mr. Pringle in Northern Mexico. Two other new genera are characterized, viz., Rhodosciadium (Umbelliferæ), and Jaliscoa (Compositæ, Eupatoriaceæ).—CHARLES E. BESSEY.

New North American Fungi.—Under this title J. B. Ellis and B. M. Everhart describe a large number of fungi, in the Proceedings of the Academy of Natural Sciences of Philadelphia. Nearly all are Ascomycetes, the genera Valsa, Diatrype, Sphærella, Leptosphæria, Cucurbitaria, Nectria, Plowrightia, and others being represented. Two new species of the last-named genus are described, viz., *P. staphylina*, on Staphylea, from London, Canada, and *P. symphoricarpi*, on *Symphoricarpus occidentalis*, from Montana.